APPENDIX A: Peer Review - Issues and Responses

The peer review generated a number of comments regarding the Agency's analysis of the costs and benefits of the National LEV program. These comments and the Agency response are discussed below.

Comment: The modeling done for the RIA makes assumptions for many different factors and the uncertainty associated with these assumptions means that different assumptions could lead to different levels of emissions reductions.

Inherent in the RIA is a significant uncertainty regarding emission reduction projections out to the year 2015, since EPA has little or no data on or experience with the effects of in-use deteriorations of LEVs, OBD systems, or reformulated gasoline. EPA should perform sensitivity analysis to explore the possible uncertainties associated with these estimates and an I/M sensitivity analysis is a good surrogate for all the uncertainties inherent in this analysis since this is the "most important factor in determining in-use performance level[s]..."

Response: As part of EPA's analysis of the OTC LEV and the National LEV programs, EPA provided data that showed the potential impacts of a large number of sensitivity issues on the benefits of these programs.[1] This analysis concluded the sensitivity changes in these factors resulted in little changes in the relative benefits of the various programs. The Agency then used the results of this analysis to determine the assumptions utilized in the RIA for the National LEV program.

Additionally, EPA has performed a sensitivity analysis looking at new I/M assumptions. This analysis provides an estimate of the emissions benefits of the National LEV and OTC LEV programs and does not include all of the data used in the RIA since it was only meant to show relative changes in emissions benefits and not actual changes. Following are two tables comparing emissions of National LEV and OTC LEV vehicles in the OTR using I/M assumptions equivalent to those used in the RIA ("Current I/M Assumptions") and using some new I/M assumptions.

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[1]See Memorandum from Gary Dolce, EPA, to Subcommittee on Mobile Source Emissions and Air Quality in the Northeast States, November 3, 1994, Docket No. A-94-11, IV-E-56. See also A-94-11, IV-E-51.

The underlying assumption for the new I/M estimate is that moderate areas in the OTR will no longer do an enhanced I/M program meeting the requirements of EPA's April 8, 1994 memo, but that serious and severe areas that have committed to doing I/M programs that get reductions equivalent to the old performance standard would continue to do whatever I/M program it takes to get the full benefits of the LEV program. This new assumption reduces the percentage of VMT in the OTR for vehicles subject to an I/M program meeting April 8, 1994 memo requirements from 85% of the total OTR VMT to 70% of the total OTR VMT. As a simplifying assumption, EPA assumed that areas that do not have I/M programs meeting April 8, 1994 requirements have no I/M at all.

The data demonstrates that different I/M estimates yield substantial differences in overall levels of emissions reductions but that the equivalency of the two programs remains essentially unchanged. EPA still believes that its current estimate of benefits regarding I/M programs apply to its analysis. The Agency will reevaluate how the I/M policies included in the April 8, 1994 memo apply to the National LEV and OTC LEV programs in light of recent changes to the enhanced I/M requirements, but EPA expects to ensure that any modifications do not effect the equivalency determination.

With regard to factors such as in-use deterioration, performance of OBD systems, and the effects of reformulated gasoline, EPA assumes that National LEV and OTC LEV vehicles will perform in a similar manner. Vehicles and fuel for both programs will be similar, if not exact, and any differences will not have a significant impact on performance. Therefore, while different assumptions might affect the overall benefits of either program, they will not affect equivalency.

Ozone Season Weekday Emission Estimates (tons/day)

VOC	Current I/M Assumptions				New I/M Assumptions			
Year	Tier 1	OTC LEV + ZEV	OTC LEV	NATIONAL LEV	Tier 1	OTC LEV + ZEV	OTC LEV	NATIONAL LEV
1990	4,527	4,527	4,527	4,527	4,565	4,565	4,565	4,565
1996	1,809	1,809	1,809	1,810	1,883	1,883	1,883	1,884
1999	1,536	1,531	1,531	1,526	1,634	1,629	1,629	1,625
2002	1,168	1,122	1,124	1,116	1,264	1,222	1,224	1,218
2005	1,032	919	923	914	1,141	1,039	1,044	1,038
2007	977	821	829	815	1,093	953	963	952
2010	916	690	703	688	1,042	839	857	844
2015	909	606	627	610	1,043	771	800	787

NOx	Current I/M Assumptions				New I/M Assumptions			
Year	Tier 1	OTC LEV + ZEV	OTC LEV	NATIONAL LEV	Tier 1	OTC LEV + ZEV	OTC LEV	NATIONAL LEV
1990	1,966	1,966	1,966	1,966	1,970	1,970	1,970	1,970
1996	1,809	1,809	1,809	1,809	1,841	1,841	1,841	1,841
1999	1,627	1,619	1,619	1,622	1,679	1,672	1,672	1,675
2002	1,495	1,416	1,418	1,429	1,562	1,490	1,493	1,504
2005	1,403	1,196	1,201	1,204	1,486	1,302	1,310	1,312
2007	1,358	1,068	1,083	1,063	1,450	1,195	1,211	1,195

2010	1,308	891	909	885	1,415	1,049	1,072	1,051
2015	1,319	753	782	732	1,439	940	979	936

Comment: It would be helpful to include emissions data from 1990 and 1996 in order to put the emissions reductions associated with the various programs in later years into the proper context.

Response: The data shown in the table below comes from EPA analysis completed during the OTC LEV rulemaking, based on the same assumptions used for the National LEV analysis. The numbers shown represent emission levels in the OTC for the years in question. Comparing these values to the emission reduction table in the accompanying report shows that OTC LEV and National LEV achieve substantial emission reductions.

Emissions for Passenger Cars and Light Duty Trucks in the OTR

Pollutant (tons/day)	Year	Tier 1	OTC LEV*
VOC	1990	4536	4536
	1996	1826	1826
NOx	1990	1967	1967
	1996	1816	1816

* assuming Tier 1 outside of OTR

Comment: The RIA analysis did not assume any ZEVs would be introduced into markets outside those in New York and Massachusetts, even though this is likely given the effect of market forces. These ZEVs would lead to a reduced need for ULEVs and reduce the costs of the program.

Response: The RIA base case emission reductions analysis assumed that ZEVs would only be introduced into those two states that have adopted that part of the California LEV program. EPA did not attempt to estimate the additional introduction of ZEVs into the OTR since neither the OTC LEV nor the National LEV programs required these vehicles. EPA has repeatedly stated that it is up to the individual states to decide whether they wished to require ZEVs in their states. Therefore, EPA's emissions analyses have not attempted to estimate the speculative introductions of ZEVs into states besides New York and Massachusetts.

The California Air Resources Board has acted to revise its regulations to remove the ZEV sales mandate for model years 1998-2002 and instead work with the automobile manufacturers to develop a ZEV market in that state through guidelines set forth in a memorandum of agreement. It is not clear how this change will affect introductions of ZEVS into other states. Therefore, estimates as to the introduction of ZEVs in other states and the associated air quality implications are now even less supportable given this additional uncertainty.

Comment: EPA's use of projections from MOBILE4 fuel consumption as a basis for growth projections were questioned. Comparisons between these projections and those obtained from using HPMS data or even a simple population surrogate were suggested.

Response: EPA used MOBILE4 fuel consumption data in this instance because they represent the most current version of EPA's fuel consumption model. While EPA recognizes that there are alternative data sources available, EPA does not believe using other surrogates would affect equivalency since none of the variations expected would be large enough to make a difference in the equivalency finding.

Comment: EPA's assumptions regarding in-use performance levels of ULEVs and ZEVs is too high. Factors such as tighter mixture control and preheated catalysts will lead to lower emissions and are not necessarily addressed in EPA's current testing programs.

Response: Once EPA's non-FTP emissions rule is implemented, the off-cycle emissions of all vehicles will be lowered significantly. EPA's analysis of this issue indicates that while it is reasonable to expect that ULEVs will have lower off-cycle emissions than LEVs and Tier 1 vehicles once these controls are in place, it is expected that the potential difference in off-cycle emissions between ULEVs and LEVs will be very small. However, the off-cycle emissions from Tier 1 vehicles will also be higher than the off-cycle emissions of LEVs. As a result, there will also be a migration impact of Tier 1 vehicles entering the OTR on off-cycle emissions. Based on current knowledge of off-cycle emissions, EPA believes that the migration impact of Tier 1 vehicles on off-cycle emissions would match or even outweigh the off-cycle emissions benefits of ULEVs. Thus, any potential differences between in-use performance of ULEVs and LEVs would not have any significant impact on the equivalency of the OTC LEV and National LEV programs.

As stated above, EPA did not attempt to model speculative introduction of EVs into state markets. EPA also did not attempt to model the full off-cycle emissions of EVs because, as demonstrated in the comment itself, there is much uncertainty related to the choice of technologies in EVs. Additionally, given EPA's consistent treatment of ZEVs in its modeling, this issue should have no effect on the equivalency determination. The Agency has never required a specific number of ZEVs to be a part of either the OTC LEV or National LEV programs.

Comment: The RIA analysis should be explicit with regards to assumptions about the effect of EPAct requirements and the prominence of alternatively-fueled ATVs.

Response: The RIA does not include any special factors for EPAct vehicles or any other alternatively-fueled ATVs. The emission benefits of the OTC LEV and National LEV programs are based on reductions achieved from a fleet operating on gasoline. The effect of EPAct requirements should be the same under both OTC LEV and National LEV -- EPAct is a separate statutory requirement that must be met regardless of whether OTC LEV or National LEV comes into effect. Given that it is a separate statutory requirement, EPA does not understand why the analysis of National LEV should include an analysis of EPAct requirements.

EPA does not have a basis for assuming that the number of ATVs sold under OTC LEV would differ from the number sold under National LEV. Neither OTC LEV nor National LEV include regulatory provisions requiring increased introduction of ATVs. The OTC States and the auto manufacturers have indicated that an agreement on National LEV would include a voluntary program for the development of sustainable markets for ATVs, but the voluntary agreement cannot now serve as the basis for modeling emissions reductions based on the number of ATVs. Instead, EPA has stated that it will work with each state on an individual basis to determine the appropriate emission reductions for the activities undertaken in the state pursuant to this voluntary agreement. Although OTC LEV does not include a specific requirement for ATVS, some believe that some ULEVs are more likely to be ATVs than to be gasoline-powered vehicles. While EPA does not believe that is necessarily the case, even assuming that under OTC LEV 20% of the ULEV fleet be ATVs and under National LEV there would be no ATVs, a sensitivity analysis EPA

did during the FACA process demonstrated that this had no effect on the equivalence determination.

Comment: Due to the differences in the California and Federal compliance programs, an analysis should be performed that quantifies the effects of the different enforcement mechanisms.

Response: EPA believes that it is unnecessary and impractical to address detrimental emissions effects, if any, related to the difference in compliance programs. Quantifying this possible effect would be extremely difficult due to the different enforcement goals and authorities of the state and federal programs. EPA believes its enforcement program to be at least as effective as California's and thus does not expect any detrimental effects. Additionally, there is a substantial amount of cooperation between the two programs that would tend to blur the distinctions between the programs. As the federal and state programs become more similar under the National LEV program, this cooperation will likely increase. In terms of equivalency, while some of the OTC states have signaled their intent to piggyback off the California enforcement programs, they have also signaled a desire to develop a regional testing facility as well. Enforcement mechanisms related to the OTC LEV program thus are uncertain. Therefore, quantifying any identifiable differences between the two enforcement programs and their effect on the equivalency determination does not seem practical or necessary.

Comment: EPA's analysis did not look at the effects of a possible opt-out on future in-use emissions associated with the National LEV program.

Response: EPA is confident that National LEV is sufficiently stable and that the projected emission reductions will be achieved, provided that the OTC States make sufficient commitments to National LEV. The National LEV program requires all manufacturers to opt into the program. The possible conditions allowing opt-out are specific and narrowly drawn and the program contains a variety of disincentives for a party to act in a manner that would trigger an off-ramp. In the unlikely event of a future opt-out, this event could trigger an EPA finding that the program was no longer in effect. However, it is not necessary to provide additional analysis for this issue at this time because of EPA's belief in the stability of the National LEV program. Additionally, since the OTC LEV rule was vacated by the U.S. Court of Appeals for the District of Columbia, there is no longer a legal requirement to find that National LEV achieves emission reductions at least as equivalent

to those from the OTC LEV program. EPA believes that National LEV does provide equivalent reductions to OTC state-by-state adoption of a LEV program, however.

Comment: The RIA excludes California from its analysis of emissions impacts of program options, specifically concerning implications related to vehicle migration effects.

Response: Migration effects on the OTR from vehicles coming from outside the OTR are based on migration from all states other than California. The analysis actually only applies a disbenefit since vehicles migrating from California will have the same benefits on both the OTC LEV and National LEV programs. The real issue in this case is effects on emissions of vehicles coming from other states and the analysis addresses this factor.

Comment: The RIA analysis does not mention the pending Tier II emission standards and an argument can be made that these standards should be made part of the baseline.

Response: EPA did not include Tier II standards as part of the baseline program assumptions since there is no requirement that these standards actually go into effect until after EPA has conducted a study and demonstrated the need for such standards. It would be inappropriate for EPA to include in the modeling an assumption that Tier 2 standards will be promulgated, because any Tier 2 standards will be established through a future rulemaking according to statutory criteria. EPA cannot assume at this time that these criteria will be met and Tier 2 standards will be promulgated. The standards that would be set in any such rulemaking are also an open issue. Thus, EPA's modeling compared OTC LEV to National LEV, both in the absence of Tier 2 standards.

A replacement of National LEV by Tier 2 standards would not diminish the modeled benefits of the National LEV program. In the absence of National LEV, there is no guarantee that there would be any Tier 2 standards or that they would be as stringent as the National LEV standards. Thus, as discussed above, EPA cannot assume for modeling purposes that certain Tier 2 standards come into effect at some given time. However, the existence of National LEV ensures that standards as stringent as those under National LEV will be in place, either as mandatory Tier 2 standards, or as a continuation of the voluntary National LEV standards. In the final National LEV rule, EPA has modified the proposed duration of the program to provide that National LEV will remain in effect until the first model year that at least

equally stringent mandatory federal standards apply. If EPA does not promulgate Tier 2 standards, National LEV will continue to apply. Thus, it is appropriate to credit National LEV with ongoing emissions reductions at the level produced by the National LEV standards, whether those reductions are eventually produced under Tier 2 requirements or whether they continue to be produced under National LEV requirements.

Comment: EPA did not look at the possibility that not all OTC states will adopt the OTC LEV program. A sensitivity analysis regarding this issue should be performed.

Response: This option was not included in the RIA because it was too speculative at the time. As a result of the OTC LEV rule, states were required to meet the SIP call of February 15, 1996. A state that did not adopt the OTC LEV program would be required to achieve similar levels of emissions reductions through adoptions of other controls. Even though the OTC LEV rule was vacated and emissions reduction equivalency is no longer a legal requirement for National LEV, EPA believes that National LEV will obtain emission reductions at least equal to those achieved by OTC state-by-state adoption of a LEV program.

Comment: EPA's use of IRS data to reflect changes in vehicle population assumptions was questioned.

Response: This data was used because it was the only surrogate readily available and was thought to provide a reasonable basis for the estimates made.

Additional comments were presented to EPA. Questions ranged from potential effects on the modeling related to the repeal of Federal speed limit requirements to the validity of included modal weightings. EPA has determined that none of these issues would lead to any differences that would effect its equivalency determination. Different weighting of the analyses was determined not to be appropriate in this instance because they are not relevant to EPA's equivalency determination.